

Employment

- 2020– **Chair of the Department of Mathematics** at *Syracuse University*.
- 2014– **Professor** at *Syracuse University*.
- 2007–2014 **Associate Professor** at *Syracuse University*.
- 2004–2007 **Assistant Professor** at *Syracuse University*.
- 2003–2004 **Post-doctoral Fellow** at *University of Toronto*.
- 2000–2003 **Assistant Professor and NSF Postdoc** at *University of Kansas*.

Education

- 2000 **Ph.D.** *University of Nebraska–Lincoln*, Lincoln NE.
Advisor: Roger Wiegand
Dissertation: *Finite Cohen–Macaulay Type*
- 1997 **M.A.** *University of Nebraska–Lincoln*, Lincoln NE.
- 1995 **B.A.** *Reed College*, Portland OR.
Advisor: V. Rao Potluri
Thesis: *Galois cohomology and profinite groups*

Grants and Funding

- 2019–2021 **CUSE grant** *Syracuse University Office of Research*.
- 2019–2022 **NSF Conference Grant** DMS-1908497, “Annual New York State Graduate Mathematics Conference”.
- 2018–2020 **Douglas R. Anderson Faculty Scholarship** from the *Department of Mathematics, Syracuse University*.
- 2018 **NSF Conference Grant** DMS-1800121, “Annual New York State Graduate Mathematics Conference”.
- 2015–2018 **NSF Grant** DMS-1502107, “Non-commutative desingularizations and representation theory”.
- 2013–2015 **NSA Grant** 110927, “Theory and applications of maximal Cohen-Macaulay modules”.
- 2013 **MSRI General Member** associated with semester-long program in *Non-commutative Algebraic Geometry*.
- 2009–2013 **NSF Grant** DMS-0902119, “Topics in the Representation Theory of Local Rings”.
- 2006–2009 **NSF Grant** DMS-0556181, “Topics in the Representation Theory of Local Rings”.
- 2004–2006 **NSA Young Investigator Grant**.
- 2003 **MSRI General Member** associated with year-long program in *Commutative Algebra*.
- 2000–2003 **NSF Mathematical Sciences Research Postdoctoral Fellowship** taken at the *University of Kansas*.

Research Interests

- Commutative Algebra
- Representation Theory
- Non-commutative Algebraic Geometry
- Algebraic Geometry

Publications

Books

- [1] Srikanth B. Iyengar, GJL, Anton Leykin, Claudia Miller, Ezra Miller, Anurag Singh, and Uli Walther. *Twenty-four hours of local cohomology*, volume 87 of *Graduate Studies in Mathematics*. American Mathematical Society, Providence, RI, 2007. xviii+282 pages. ISBN: 978-0-8218-4126-6.
- [2] GJL and Roger Wiegand. *Cohen-Macaulay representations*, volume 181 of *Mathematical Surveys and Monographs*. American Mathematical Society, Providence, RI, 2012. xviii+367 pages. ISBN: 978-0-8218-7581-0. URL: <http://www.leuschke.org/research/MCMBook>.
- [3] GJL, Frauke Bleher, Ralf Schiffler, and Dan Zacharia, editors. *Representations of algebras*, volume 705 of *Contemporary Mathematics*. American Mathematical Society, Providence, RI, 2018. Proceedings of the 17th Workshop and International Conference on Representations of Algebras, August 10–19, 2016, Syracuse University, Syracuse, New York. doi:10.1090/conm/705.
- [4] Nicholas R. Baeth, Thiago H. Freitas, GJL, and Victor H. Jorge Pérez, editors. *Commutative algebra—150 years with Roger and Sylvia Wiegand*, volume 773 of *Contemporary Mathematics*. American Mathematical Society, Providence RI, 2021. Combined proceedings: Second International Meeting on Commutative Algebra and Related Areas (SIMCARA), July 22–26, 2019, Universidade de São Paulo, São Carlos, Brazil, AMS Special Session, Commutative Algebra: in celebration of the 150th birthday of Roger and Sylvia Wiegand, September 14–15, 2019, University of Wisconsin-Madison, Wisconsin. doi:10.1090/conm/773.

Articles

- [1] GJL and Roger Wiegand. Ascent of finite Cohen-Macaulay type. *J. Algebra*, 228(2):674–681, 2000. doi:10.1006/jabr.2000.8294.
- [2] GJL. Mixed characteristic hypersurfaces of finite Cohen-Macaulay type. *J. Pure Appl. Algebra*, 167(2-3):225–257, 2002. doi:10.1016/S0022-4049(01)00044-5.
- [3] GJL. Gorenstein modules, finite index, and finite Cohen-Macaulay type. *Comm. Algebra*, 30(4):2023–2035, 2002. doi:10.1081/AGB-120013229.
- [4] Craig Huneke and GJL. Two theorems about maximal Cohen-Macaulay modules. *Math. Ann.*, 324(2):391–404, 2002. doi:10.1007/s00208-002-0343-3.
- [5] Craig Huneke and GJL. Local rings of countable Cohen-Macaulay type. *Proc. Amer. Math. Soc.*, 131(10):3003–3007 (electronic), 2003. doi:10.1090/S0002-9939-03-07167-3.
- [6] Ian M. Aberbach and GJL. The F -signature and strong F -regularity. *Math. Res. Lett.*, 10(1):51–56, 2003.
- [7] Craig Huneke and GJL. On a conjecture of Auslander and Reiten. *J. Algebra*, 275(2):781–790, 2004. doi:10.1016/j.jalgebra.2003.07.018.
- [8] GJL and Roger Wiegand. Hypersurfaces of bounded Cohen-Macaulay type. *J. Pure Appl. Algebra*, 201(1-3):204–217, 2005. doi:10.1016/j.jpaa.2004.12.028.
- [9] GJL and Roger Wiegand. Local rings of bounded Cohen-Macaulay type. *Algebr. Represent. Theory*, 8(2):225–238, 2005. doi:10.1007/s10468-004-8319-5.
- [10] GJL. Appendix to “Tight closure theory and characteristic p methods”, by M. Hochster. In *Trends in commutative algebra*, volume 51 of *Math. Sci. Res. Inst. Publ.*, pages 181–210. Cambridge Univ. Press, Cambridge, 2004.

- [11] GJL. Endomorphism rings of finite global dimension. *Canad. J. Math.*, 59(2):332–342, 2007. doi:10.4153/CJM-2007-014-1.
- [12] Ragnar-Olaf Buchweitz and GJL. Factoring the adjoint and maximal Cohen-Macaulay modules over the generic determinant. *Amer. J. Math.*, 129(4):943–981, 2007. doi:10.1353/ajm.2007.0022.
- [13] David A. Jorgensen and GJL. On the growth of the Betti sequence of the canonical module. *Math. Z.*, 256(3):647–659, 2007. doi:10.1007/s00209-006-0096-x.
- [14] Ragnar-Olaf Buchweitz, GJL, and Michel Van den Bergh. Non-commutative desingularization of determinantal varieties I. *Invent. Math.*, 182(1):47–115, 2010. doi:10.1007/s00222-010-0258-7.
- [15] Andrew Crabbe and GJL. Wild hypersurfaces. *J. Pure Appl. Algebra*, 215(12):2884–2891, 2011. doi:10.1016/j.jpaa.2011.04.009.
- [16] David A. Jorgensen, GJL, and Sean Sather-Wagstaff. Presentations of rings with non-trivial semidualizing modules. *Collect. Math.*, 63(2):165–180, 2012. doi:10.1007/s13348-010-0024-6.
- [17] GJL. Non-commutative crepant resolutions: scenes from categorical geometry. In S. Sather-Wagstaff et. al., editor, *Progress in commutative algebra 1: Ring Theory, Homology, and Decompositions*, De Gruyter Proceedings in Mathematics, pages 293–361. de Gruyter, Berlin, 2012.
- [18] GJL and Roger Wiegand. Brauer-Thrall theory for maximal Cohen-Macaulay modules. In I. Peeva, editor, *Commutative Algebra: Expository papers dedicated to David Eisenbud on the occasion of his 65th birthday*, pages 577–592. Springer Verlag, 2013.
- [19] Ragnar-Olaf Buchweitz, GJL, and Michel Van den Bergh. On the derived category of Grassmannians in arbitrary characteristic. *Comp. Math.*, 131(07):1242–1264, 2015. doi:10.1112/S0010437X14008070.
- [20] Ragnar-Olaf Buchweitz, GJL, and Michel Van den Bergh. Non-commutative desingularization of determinantal varieties, II: Arbitrary minors. *Int. Math. Res. Not.*, 2016(9):2748–2812, 2015. doi:10.1093/imrn/rnv207.
- [21] Alex S. Dugas and GJL. Some extensions of theorems of Knörrer and Herzog-Popescu. *J. Algebra*, 571:94–120, 2021. doi:10.1016/j.jalgebra.2018.11.021.
- [22] GJL and Tim Tribone. Branched covers and matrix factorizations. *Bull. L.M.S.*, 55(6):2907–2927, 2023. doi:10.1112/blms.12901.

articles available from www.leuschke.org/Research/Papers/

Other mathematical writing

- [1] GJL. Noncommutative resolutions. *Emissary: the newsletter of the Mathematical Sciences Research Institute*, 2013. URL: <http://www.msri.org/attachments/media/news/emissary/EmissarySpring2013.pdf>.

Selected Invited Lectures, Last 5 Years

2023

- Feb. “Climbing the Chimney: times I got a belay from UNL Math”, *MATH 125*, Mathematics Department, University of Nebraska-Lincoln, Keynote address.

2021

- Feb. “Matrix factorizations and Knörrer periodicity”, *Virtual Commutative Algebra Seminar*, IIT Bombay.

2019

- Aug. “What should a non-commutative resolution of singularities be, and why should it involve MCM modules?”, *Summer school on “Cohen-Macaulay modules in representation theory”*, Bad Driburg, Germany, series of three one-hour lectures.
- Jul. “Direct-sum decompositions over local rings”, *Second International Meeting in Commutative Algebra and Related Areas (SIMCARA)*, a conference in honor of Roger and Sylvia Wiegand, São Carlos, Brazil, minicourse of three one-hour lectures.
- Jul. “MCM modules over branched covers”, *Workshop “Ragnar’s Ramifications in Algebra and Geometry Emerging (RRAGE)”*, Fields Institute, Toronto Canada.

Teaching and Mentoring

- 2018 **Excellence in Graduate Education Faculty Recognition Award**, Syracuse University.

Postdoctoral Scholars Supervised

- 2016–2018 **Rebecca R.G.**, PhD from University of Michigan, 2016. Currently Assistant Professor, George Mason University.
- 2014–2016 **Denise Rangel Tracy**, PhD from University of Texas Arlington, 2014. Currently Visiting Professor, Central Connecticut State University.
- 2008–2010 **Andrew Crabbe**, PhD from University of Nebraska–Lincoln, 2008. Currently anatomic pathologist, Boston MA.

PhD Students Supervised

- 2024 **Richard Bartels**, *Numerical invariants of Cohen-Macaulay local and graded rings*, Syracuse University.
- 2022 **Tim Tribone**, *Matrix Factorizations with More than Two Factors*, Syracuse University.
- 2019 **Özgür Esentepe**, *Annihilation of Cohomology over Gorenstein Rings*, University of Toronto.
- 2018 **Robert Roy**, *Auslander-Reiten Theory over Gorenstein Rings of Dimension One*, Syracuse University.
- 2017 **Joshua Stangle**, *Representation Theory of Orders over Cohen-Macaulay Rings*, Syracuse University.

Current PhD Students

- Kaiyue He**, PhD expected Spring 2025, Syracuse University.
- Bhargavi Parthasarathy**, PhD expected Spring 2025, Syracuse University.

Courses Taught

- 2004– **Syracuse University.**
Elements of Modern Mathematics, Calculus I, II, and III, Differential Equations, First & Second Courses in Linear Algebra, Applied Linear Algebra, Intro to Abstract Algebra, Senior Seminar in Mathematics, Graduate Algebra I and II, Homological Algebra, Commutative Algebra, Topics in Algebra: Combinatorial Commutative Algebra, Topics in Algebra: MCM Modules, Topics in Algebra: The McKay Correspondence

- 2003–2004 **University of Toronto.**
Calculus!
- 2000–2003 **University of Kansas.**
Calculus I, Intro to Statistics, Special Topics: MCM Modules
- 1995–2000 **University of Nebraska–Lincoln.**
College Algebra, Trigonometry, Precalculus, Recitations for Calculus I and II

Service to the Institution

Syracuse University Mathematics Department

- 2020– **Chair.**
- 2015–2020 **Associate Chair** for Graduate Affairs.
- 2015–2020 **Faculty Advisor** for the *SU Mathematics Graduate Organization*.
- 2012– **co-Editor** (with L. Kovalev) of the departmental newsletter.
- 2008–2023 **Social Media co-Guru** (with L. Kovalev until around 2014), maintain and cultivate department's website and Facebook/Instagram/Twitter presences.
- 2017–2018 **Ad Hoc Committee** for the tenure case of Yuan Yuan.
- 2017–2018 **Ad Hoc Search Committee** to fill tenure-track position in pure mathematics.
- 2014–2015 **Associate Chair** for Undergraduate Affairs.
- 2006–2014 **Preparing Future Faculty/Future Professoriate Program** mentor for Wei Ning, Derek Gustafson, Thomas Bleier, and Dayal Dharmasena.
- 2009–2014 **Colloquium Chair.**
- 2013–2014 **Graduate Committee** (Chair).
- 2011–2012 **Ad Hoc Search Committee** to fill tenure-track position in Combinatorics.
- 2011–2012 **Ad Hoc Committee** for the tenure case of Lixin Shen.
- 2011–2012 **Executive Committee.**
- 2009–2011 **Graduate Committee** (Chair 2010–2011).
- 2006–2008 **Undergraduate Committee.**
- PhD Preliminary Examiner.**
Jan 2007, Aug 2007, Jan 2009, Jan 2011, Jan 2012, Aug 2013, Aug 2014, Jan 2016, May 2017, May 2018, Aug 2018, Aug 2019, Dec 2019, Aug 2020, Dec 2020, May 2021, Aug 2022, Dec 2022, May 2023.
- PhD Qualifying Examiner.**
Feb 2015.
- PhD Dissertation Defense Committees.**
Markus Reitenbach, Sebastian Burciu, Philip Lynn, Allen Pelley, Christina Graves, Thomas Bleier, Marju Purin, Kosmas Diveris, Melissa Voldan DiMarco, Jennifer Edmond, Eric Ottman, Scott Bassler (Physics) (chair), Ricky Laishram (EECS) (chair), Rachel Diethorn, Laura Ballard, Jinjia Xie (Math Ed) (chair), Mkrtich Ohanyan, Caleb McWhorter, Nathan Uricchio, Muhammad Asaduzzaman (Physics) (chair), Bharath Sambasivam (Physics) (chair).

Syracuse University College of Arts & Sciences

- 2010–2011 **Search Committee for Mathematics Department Chair** charged by Mathematics Department and Dean Langford to formulate and implement procedures to select new Chair.
- 2009–2010 **First-Year Advisor** help incoming first-year students from across the college.
- 2007–2008 **Curriculum Committee** supervise courses and curricular programs.

Syracuse University

2018–2019, 2021–2023, 2024–2026 **University Senate** appointed to the *Committee for Services to Faculty and Staff*, *Committee on the Libraries*, and *Committee on Research and Creative Scholarship*.

Other

2015–2016 **Faculty advisor** for SU Club Soccer team.

2010–2014 **Faculty advisor** for SU Bowling Club.

Service to the Profession

Editorial

2001–2021 **co-Founder, Designer, and co-Webmaster** of *www.commalg.org*, with Moira McDermott and Keri Sather-Wagstaff. A website for the commutative algebra community, including conference announcements, news, and links of interest to commutative algebraists.

2007–2016 **Associate Editor** for *Journal of Commutative Algebra*.

2012–2023 **Associate Editor** for *Communications in Algebra*.

Organizational

2019 Sep. **AMS Special Session on Commutative Algebra: in Celebration of the 150th Birthday of Roger and Sylvia Wiegand**, with N. Baeth, Madison WI.

2019 July **Scientific Committee for Second International Meeting in Commutative Algebra and Related Areas (SIMCARA)**, a conference in honor of Roger and Sylvia Wiegand, São Carlos, Brazil.

2018 Sep. **28th Route 81 Conference on Commutative Algebra and Algebraic Geometry** with S. Diaz and C. Miller, Syracuse NY.

2016 Aug. **Workshop and International Conference on Representations of Algebras (ICRA 2016)** with D. Zacharia and M. Kleiner, Syracuse NY. Funded by Syracuse University, the National Science Foundation, and the National Security Agency.

2013 Oct. **23rd annual Route 81 Conference on Commutative Algebra and Algebraic Geometry** with S. P. Diaz and C. Miller, Syracuse NY.

2012 Apr. **Interactions between Commutative Algebra and Representation Theory: A conference in honour of Ragnar-Olaf Buchweitz** with S. Iyengar, C. Miller, and D. Zacharia, Syracuse NY. Funded by the National Science Foundation.

2010 Oct. **AMS Special Session on Commutative Algebra and Algebraic Geometry (proxy for 20th Route 81 Conference)** with A. Geramita, C. Miller, and M. Stillman, Syracuse NY.

2010 Jan. **AMS Special Session on Commutative Algebra** with S. Cooper and K. Sather-Wagstaff, San Francisco CA.

2009 Oct. **19th Annual Route 81 Conference on Algebraic Geometry and Commutative Algebra** with S. P. Diaz and C. Miller, Syracuse NY.

2006 Dec. **CMS Special Session on Commutative Algebra and Algebraic Geometry** with R.-O. Buchweitz and G. G. Smith, Toronto, Ontario, Canada.

2006 Sep. **16th Annual Route 81 Conference on Algebraic Geometry and Commutative Algebra** with S. P. Diaz and C. Miller, Syracuse NY.

2005 Aug. **Minnowbrook Workshop on Commutative Algebra** with S. Iyengar, C. Miller, and A. Singh, Minnowbrook Adirondack Conference Center, NY. Funded by Syracuse University and the National Security Agency.

- 2004 May **AMS Special Session on Commutative Algebra** with S. Iyengar, Houston TX.
 2001 Oct. **AMS Special Session on Commutative Algebra** with S. Loepp, Williamsown MA.

Other Service to the Mathematical Community

2013–2016 **AMS Committee on Meetings and Conferences** *Member at Large 2013–2014, Chair 2014–2016.*

ongoing **Referee** *for the following journals.*

- Acta Mathematica Sinica
- Advances in Mathematics
- Algebra and Number Theory
- Algebra and Representation Theory
- American Journal of Mathematics
- American Mathematical Monthly
- Arabian Journal of Mathematics
- Bulletin of the American Mathematical Society
- Bulletin of the Brazilian Mathematical Society
- Compositio Mathematica
- Czechoslovak Mathematical Journal
- Communications in Algebra
- Duke Mathematical Journal
- Forum Mathematicum
- Geometriae Dedicata
- Illinois Journal of Mathematics
- Indian Journal of Pure and Applied Mathematics
- International Mathematics Research Notices
- Inventiones Mathematicae
- Journal of Algebra
- Journal of Algebra and its Applications
- Journal of Software for Algebra and Geometry
- Journal of Pure and Applied Algebra
- Mathematica Scandinavica
- Mathematical Research Letters
- Mathematische Annalen
- Mathematische Zeitschrift
- Malaysian Journal of Mathematics
- Memoirs of the AMS
- Nagoya Mathematical Journal
- Osaka Journal of Mathematics
- Pacific Journal of Mathematics
- Proceedings of the American Mathematical Society
- Proceedings of the London Mathematical Society
- Rocky Mountain Journal of Mathematics
- Selecta Mathematica
- Transformation Groups

ongoing **Reviewer and Panelist** *for NSF and NSA grant proposals.*

ongoing **Reviewer** *for Mathematical Reviews, 59 articles.*